

ON THE SMALLPOX EPIDEMIC IN BOSTON, IN 1872-73.

Read before the Massachusetts Medical Society, June 3, 1873.

By M. E. WEBB, M.D. Bowd., of Boston.

It is not the intention in this paper to enter upon a scientific discussion of smallpox, but simply to give a short report of the origin, progress, abatement and general management of the disease as it existed in Boston for sixteen months, commencing January 1st, 1872, and ending May 1st, 1873. This will be presented in the form of facts, with a few statistics; leaving the conclusions to be drawn from them, in the main, to others.

It should be stated, however, at the outset, that prior to January, 1872, during at least six months, sporadic cases were continually occurring among newly arrived emigrants, or those receiving the contagion from them, and in persons who had visited Lowell during the prevalence of an epidemic there. This relates only to patients treated in hospitals, but I am informed that there was a larger number of cases existing in the city during the year 1871 than was generally supposed, but there were few removals to hospitals, and no records of cases kept. Judging from the fact that there were but few deaths, we infer that the type of the disease was exceedingly mild. It increased somewhat during the autumn, but it was not until the time at which this report commences that the disease assumed an alarming aspect or that a general removal to hospital commenced.

The only hospital accommodations existing at that time within the city limits were eight beds at a house on Albany street, in the rear of the City Hospital, and under the charge of the directors of that institution. These, however, were only for patients who could pay fifteen dollars per week, the only free beds being at Galloupe's Island; this island was used, also for quarantine purposes, and, it is needless to add, was inadequate to meet the wants of an epidemic, wholly unfit for the proper treatment of the disease, the transportation of patients endangering the lives of those very sick and no doubt causing many deaths. Moreover, the place was strongly objected to by all classes, associating it, as they did, with the neighboring penal institutions; the removal by force to such a place, was look-

ed upon as a system of cruelty exercised upon the helpless. This was early and fully realized by Dr. Green, City Physician, who represented it in its true light to the City Council; and in due time, an order was passed authorizing the trustees of the City Hospital to receive at the house on Albany street, without pay, such patients as were too sick to be removed to the Island, and such as would go willingly when they would not be taken from their homes to the island without the exercise of force. An old building, formerly used as a hospital for cholera, upon the same grounds and adjoining the Smallpox Hospital, was partially fitted up; and these two buildings, which could be crowded to a capacity of fifty beds, were sufficient to accommodate all patients prior to July, 1872, except those exempted by law, or others from tenement houses who could not be removed without endangering life. Poor as this was, and disgraceful as it was that a city like Boston should have no better accommodations for the care of unfortunates suffering from this dread malady, it was infinitely better than nothing—better than the Island, which was the next thing to it; and it undoubtedly prevented a general epidemic at that time with a large loss of life.

In the midst of the good work which this place, bad as it was, was undoubtedly doing, the citizens in the vicinity, bringing into service newspaper sensationalism which portrayed the horrors of having a pest house in this locality (although there never was a case of the disease traceable to it), so excited the public that a petition was extensively signed to have this nuisance abated. The City Council, after a whitewashing investigation (the principal thing being to justify their own neglect, and to throw the responsibility upon somebody else), gracefully yielded to public clamor and closed the only place they at that time possessed, without a prospect of having another; at the same time frowning upon a petition signed by hundreds of the citizens who fully appreciated the situation, and asked for the establishment of an independent Board of Health.

From the time the Albany Street Hospital was closed, there was a steady increase of the disease; the poorer classes, living in crowded localities, secreted their friends, sometimes not even employing a physician for fear that the sick one would be sent to the Island, and often a reported death would be the first intimation the authorities had that the disease existed in a certain locality. Then, of course, the information came too late to avail anything. Fumigation was performed by the Health Office, the so called Board of Health establishing the price for its performance at three dollars for one room or five dollars for a whole tenement; and the Superintendent of Health was not expected to perform this duty without the payment of this fee, or on special order from the Board. This duty was efficiently performed, however, and if this officer had had entire charge of the Department, and had not been crippled by the red tape of higher

powers, the health affairs of the city would have been much more successfully and satisfactorily managed. As it was, the tenants were, in many instances, too poor, and the owners were too penurious to pay the sum demanded, and thus a large number of infected dwellings were left with no precautions whatever taken to disinfect bedding, clothing, &c., or the disinfection was partially performed by the ignorant tenants themselves.

Is it surprising that, under these circumstances, the poison was rapidly disseminated? In spite of the untiring devotion of Dr. S. A. Green, the City Physician, who sacrificed personal as well as professional interests to battle alone the advances of this enemy, and who was often openly and bitterly opposed by those in authority in whose interest he so arduously labored, pestilence walked in our streets, rode upon our horse-cars, visited our hotels and public buildings, and our tenement houses, dirty and filthy as many of them were before, now became hot beds for contagion. Against 91 cases and 32 deaths reported for the month of July when the Albany Street Hospital was closed, we had 872 cases and 246 deaths reported for the month of December, the same year.

Thus, this obstinate do-nothing policy continued, and on that policy lies the responsibility, in a great measure, of a large loss of life, a material injury to the business interests of a city crippled by a great conflagration, a harvest field from which the poison was scattered throughout the towns all over the Commonwealth, as shown by the last report of the State Board of Health. Approaching elections, however, and the general cry from all classes of citizens for reform, warned the authorities that some efforts must be exerted to stay the spread of the disease; and a large force of vaccinators were engaged to perform house-to-house vaccination. This force, unorganized and without systematized responsibility, entered upon its duty, but the result was far from satisfactory, so far as checking the ravages of the disease was concerned, and, with one or two exceptions, no records of importance were kept.

Meanwhile a piece of swamp land had been purchased on Swett street and a hospital erected which, unfortunately, was burned the night before it was ready for occupancy. Of this building, I know nothing; but the one that rapidly succeeded it, while it was undoubtedly better than none, was unfit, both by its location and appointments, for the satisfactory treatment of the disease.

In time, a new City Government was formed which, fortunately for Boston, consisted mostly of new members, fully alive to the emergency. Encouraged by the heroic action of the mayor, who knew his duty and dared to act, the City Council did what the old City Government for six months had repeatedly refused to do, namely, established a Board of Health independent of party or power. One of the first official acts of this Board was to take possession of the Roxbury almshouse as a hospital; this building

proved capacious enough, with the one upon Swett street, already opened, to meet every demand. A corps of vaccinators was immediately organized and made responsible for the vaccination and re-vaccination of all classes. The result was highly satisfactory. The disease rapidly subsided under the combined effects of isolation and vaccination, and in three months the epidemic was conquered and public confidence was fully restored.

Having thus alluded to the rise and fall of the epidemic, I will add a few statistics bearing upon the disease, as well as to substantiate the assertions made. They are taken from the records of hospitals in this city, from those of Galloupe's Island and of the Health Office. The only record of those not removed is the bare fact that they had smallpox, and the City Registrar's office shows that nearly one-third of them died.

The number of cases of smallpox reported during the time embraced in this review was 3,722.

The whole number of deaths resulting from it was 1,026.

The percentage of mortality was 27.56.

These figures are sufficiently large to show the severity of the epidemic, exceeding the per centage of either New York or Philadelphia death-rates.

The unusual virulence of the disease is also shown by the large number of hæmorrhagic cases which occurred. Of the 1232 cases in hospitals, we find 97 of the hæmorrhagic form, or 7.58 per cent., all of which proved fatal. There was a still larger proportion among those not removed; but allowing the same percentage for the whole number of cases, we have 282 deaths from this, the most fatal form of the disease. There were a few cases that had a hæmorrhagic tendency in the earlier stages of the disease, but the eruption abated early, and the patients recovered. True cases of this kind have always died, in all the instances witnessed. It occurred most frequently in vitiated constitutions, syphilitics, drunkards, prostitutes, &c. Males and females suffered equally. The middle-aged seemed more liable to this form than the old, while it has been very rare in children; in fleshy people, it occurred rather oftener than in the emaciated. The prodromata were generally more marked than in the milder or even severe forms. Extreme prostration came on rapidly, followed by an erythema over the entire body, assuming a lobster red color. The conjunctiva was injected with blood, with here and there papules or later vesicles filled with the bloody serum characterizing the disease.

On the second day of the eruption, sometimes earlier but seldom later, hæmorrhages from the mucous surfaces would take place,—in males, from the mouth, fauces, bladder and rectum; in females, invariably from the uterus. If a woman was pregnant, she miscarried early and died from excessive hæmorrhage. It has not proved so contagious as milder forms; and there was always a

peculiar odor, not experienced in either the discrete or confluent varieties. The diagnosis was, in some cases, difficult, from the resemblance to other exanthemata, and because the characteristic appearances would not become evident till the patient was moribund or even dead; and sometimes they were discovered, even then, only by diligent search over the entire body.

The remarkable intensity of the variolous poison was still farther attested by the unprecedented number of recurrent cases; the writer personally witnessed thirty-eight cases, which presented scars of former recoveries; three of these had the disease twice within three months. The following notes are introduced to illustrate this interesting feature of the epidemic.

Mrs. M. F., aged 39, married, had smallpox twelve weeks ago, and was treated by Dr. White. Diagnosis verified by Dr. Green. Case not removed, and several cases resulted in the same house, receiving the contagion from her; two of these came to the hospital for treatment.

On Sunday, Sept. 22, she was delivered of a dead foetus, at the eighth month of pregnancy; hæmorrhage not excessive, but there was great exhaustion.

On the Tuesday following, an eruption appeared. Dr. Street, her physician at this time, reported it as a case of smallpox. On the afternoon of the same day, I saw the case with Dr. Green. There was an eruption over the entire body, with, here and there, thickly accumulated patches, especially upon the abdomen, besides several large blebs filled with bloody serum, the whole surface presenting a lobster red appearance. Uterine hæmorrhage small, but exhaustion extreme; frequent collapse on movement; great dyspnœa; pulse rapid and feeble; tongue dry. The symptoms indicated immediate dissolution.

The cicatrices of the first attack were faint, on account of the erythema; but they were perceptible.

She was attended, both times, by the same woman, an old, experienced smallpox nurse, who was greatly surprised on being called upon, the second time, to attend the same patient for the same disease.

Since the publication, last year, in this JOURNAL,* of a case of recurrent smallpox, another one has come to my knowledge, having some connection with the case published.

E. M., aged 4, was taken sick, March 22d, 1872. The mother of this child was very intimate with the mother of the child above referred to as previously reported; she had visited and had even held E. M. in her lap, when her own child was sick at home with the first attack of variola. On the 25th, an eruption appeared, just three days after the primary symptoms. Dr. Granger, the family physician, was called, and pronounced it smallpox and reported it as such.

* See Journal of June 6th, 1872.

Dr. Green, City Physician, saw the case and examined it carefully, and had no doubt that the diagnosis was correct. The child recovered, and enjoyed good health during the summer.

October 24th, the child was again taken sick, and in two days an eruption appeared. Dr. Granger was again called, and again diagnosed smallpox and reported it.

Dr. Green saw the child on October 31st, and informed me of the case, saying that he recalled the circumstances of the first attack, the preceding March. I saw the case November 4th, and certainly there was no doubt this time, as the child was *in articulo mortis*, with confluent smallpox.

This child had been vaccinated when very young, and the mother said had a very sore arm, but, of course, no cicatrices were visible.

In addition to these cases, I have also seen three instances with the third attack, and have full records of two cases with evidence sufficient to prove the fact, one having two good marks of vaccination performed before either attack; the other, one fair mark. The history of the one having two marks is as follows:—

Mrs. N. D., aged 24, married, native of Dover, N. H.; when not quite a year old, her sister had smallpox, and she, with her mother, took the disease, in a light form, and was removed to the pest-house in Dover. She had been previously vaccinated, and to this day shows two fair cicatrices.

At the age of 14, while attending school in Manchester, N. H., she had the second attack. The prodromata were quite severe, but she kept up as long as possible in order not to lose her place in her class. She was finally obliged to keep her room, and a Dr. French was called in. He pronounced it smallpox. There were, at that time, a few sporadic cases there. She had varicella in the interval, and shows some few marks, beside two sets of scars undoubtedly variolous.

I saw the patient December 24, 1872, and she was then suffering from the discrete form of the disease; the eruption was in the pustular stage and was commencing to desquamate upon the face, it being then the seventh day of the eruption. The primary fever was high, with severe head-ache, back-ache, &c.

This case was one of uncomplicated variola discreta, but it was much more severe than the previous attacks. I have seen this patient since her recovery, and she is considerably marked from the last attack.

For further details, I am obliged to rely on the figures of the three hospitals within the city limits.

Of those treated, about sixty per cent. were American born, fifteen per cent. were from the British Provinces, fifteen per cent. were from Ireland, and ten per cent. were from other parts of the world, the death-rate being in about the same proportion.

Again, the highest death-rate was in the male sex.

Number of males treated, 538.

Number of deaths, 127.

Percent. of mortality, 23·60.

Number of females treated, 180.

Number of deaths, 58.

Percent. of mortality, 18·83.

As might be expected, the death-rate was exceedingly large among the unvaccinated.

Number of unvaccinated, 113.

Number of deaths, 55.

Percent. of mortality, 48·76,

or nearly one half.

Number of vaccinated, 690.

Number of deaths, 130.

Percent. of mortality, 19·55,

or 29·21 per cent. less than death-rate among the unvaccinated.

Number of re-vaccinated, 84.

Number of deaths, 15.

Percent. of mortality, 17·85,

or 1·70 per cent. less than under head of vaccinated.

For the purpose of showing the value of the vaccine scar, we sub-join the following statistics:—

Number having one (1) scar, 413.

Number of deaths, 52.

Percent. of mortality, 12·06.

Number having two (2) scars, 103.

Number of deaths, 8.

Percent. of mortality, 7·76,

or 4·30 per cent. less than those having only one cicatrix.

Number having three (3) scars, 36.

Number of deaths, 0.

Number having four (4) scars, 3.

Number of deaths, 0.

Number having five (5) scars, 3.

Number of deaths, 2.

One of these had five marks from primary vaccination, and had a discrete form of the disease, and recovered. The other two had three marks from primary vaccination, and two from re-vaccination within three years—both had the hæmorrhagic form, and both died.

One patient had six marks, three primary and three secondary, the result of re-vaccination last November. One had eight good marks, which he had borne from infancy. These last two had the disease in a mild form, and made good recoveries.

So many theories have been advanced in relation to the subject of vaccination, that absolute truth is reached with difficulty. That it is the only preventive known, and that it is one of the grandest

advances ever made in medical science, in saving life and preventing human suffering, all acknowledge; that it has done so in the late epidemic is satisfactorily proved by the records. Allowing this and even more, that it is far better to protect than previous attacks of smallpox, it has not proved an entire safeguard. The many cases of recurrent smallpox, including some instances of young children previously vaccinated and re-vaccinated, certainly point to the conclusion that there are persons so susceptible to the influence of variolous poison that no amount of vaccination or previous attacks would prevent the disease, if these persons were exposed to the contagion.

Regarding the scar, we have hesitated to make a favorable prognosis upon that alone, in the earlier stages, whether the patient had or had not one or two or even five good, fair or poor marks upon the arm; and the fact that physicians and nurses who have constantly been exposed to the contagion, and in two instances under my own observation have been inoculated with the virus upon abrasions of the hand, while they showed no trace of a vaccine cicatrix, yet have not suffered from the disease, is certainly strong evidence that vaccination may protect without any external mark whatever.

A valuable paper, read by Dr. B. E. Cotting before the Boston Society for Medical Improvement, and published in this JOURNAL, April 25th, 1872, seems to prove this fact conclusively. In the experiments, under his instruction, by Dr. J. H. Davenport, of this city, a new method was devised and performed for the sole purpose of proving that a person could be successfully vaccinated without the vaccination in the least showing itself, or leaving a trace upon the external surface. The lymph was inserted into the arm by means of a hypodermic syringe with a long needle, and was carried underneath the skin as far as possible from the point of puncture, in order that external pock might be prevented, and, consequently, protection gained without a scar. His procedure is wholly different from that of Clemens and others in Germany, whose object was merely to deposit the lymph in the cellular tissues directly under the wound, with the expectation that pock would form externally around the puncture, as actually occurred whenever their operation was successful.

Re-vaccination has been extensively performed, and has, no doubt, saved many who otherwise might have had the disease. While, in epidemics, this may be imperative, the view that it should be done every three or five years, should be received with hesitation. If properly done in infancy, and at least faithfully attempted again after puberty, it ought to be sufficient, except, perhaps, in epidemics, or among people living in tenement houses where the disease exists; in these conditions, re-vaccination should be performed whether one, three, or five years had intervened since the last introduction of vaccinia.

Both animal and humanized virus have been used, but there are no data to lead to correct conclusions as to the relative protective value of the two. For my own part, I am fully committed to the use of animal virus, for the reason, in the first place, that there is no danger of introducing syphilis or other diseases, a danger which does undoubtedly occur, though not so frequently as many suppose; and, secondly, because I consider its protective power greater. I have yet to see the first case of variola, in any form, among the thousands that have been vaccinated with what was known to be animal virus, including over eight hundred cases in my own practice where this has been used. The nearest approach to it is the fact that several cases have been noted where the disease existed, and was attributed to the bad pock used, or in other words, to inoculation with variola, the eruption making its appearance on the eleventh or twelfth day after vaccination. These are not true instances, for the reason that these cases were seen generally upon the fourth day of the disease and were probably vaccinated two or four days after receiving variolous contagion, and, under those circumstances, we should not expect to do more than modify the progress of the variola.

For complications, beside those commonly seen, we have observed two conditions not referred to by authors in treatises upon small-pox.

In females, if the disease has been in any way severe, they have menstruated invariably during the primary fever; in girls, the first menstrual period came on, and in people near the climacteric, the catamenia appeared, when perhaps menstruation had been delayed for one year. So common has this been, that a diagnosis has been made upon this fact alone, that there was a flow of blood from the uterus occurring out of the regular time for the menstrual epoch. In some way, the poison seems to affect the uterus, and to exert a special action upon its functions.

In several cases, and always where the disease has been mild, and had passed regularly into the desquamative stage, suddenly, without a warning, or a perceptible cause, patients would have convulsions—inflammation of the brain or spinal cord—followed by paralysis, either complete or partial, and death in twenty-four or forty-eight hours. In three instances, paralysis commenced in one leg, then the arm of the same side was affected; then the other leg and arm; then complete paralysis; the mind of the patient remaining clear to the last.

There were two cases that had paralysis without the first symptom of inflammation and both these died. An examination of the urine in these cases disclosed the fact that it was heavily loaded with albumen. No microscopical examination was made. This might have thrown some light upon this peculiar manifestation, as Bright's disease was suspected.

All the cases, some eight in number, that we have seen, proved fatal.*

Treatment.—We will premise the discussion of treatment by giving a table of mortality-rates in the different places where the disease has been treated.

In the Albany Street hospital, which was open six months, the

Number of cases treated was 322.

Number of deaths was 76.

Per cent. of mortality, 23·60,

or nearly four per cent. less than the general average.

The highest mortality rate was at Galloupe's Island; here the

Number treated was 487.

Number of deaths, 182.

Per cent. of mortality, 39·59,

or nearly forty per cent., 15·99 per cent. larger than at the old Albany Street hospital.

The next largest death-rate was among those not removed.

Number treated at their own homes, 2,342.

Number of deaths, 659.

Per cent. of mortality, 27·09.

This is 12·5 per cent. less than that at the Island; yet the Albany Street hospital had an advantage of 3·5 per cent. over this.

At Hospital No. 1, (Swett Street),

Number treated, 233.

Number of deaths, 49.

Per cent. of mortality, 21·02,

or 18·57 per cent. less than at the Island,

7·07 " " " " among those not removed.

2·58 " " " " at the Albany Street hospital.

The lowest rate was at the Marcella Street hospital, or the old Roxbury Almshouse.

Number treated, 300.

Number of deaths, 60.

Per cent. of mortality, 20·00,

or 1·02 per cent. less than at the Swett Street hospital.

3·55 " " " " " Albany Street hospital.

7·04 per cent. less than among those not removed.

19·54 " " " " at the Island.

Allowing that the city had possessed a hospital like this latter at the commencement of the epidemic, and that all the cases had been treated there, we find that one hundred and ninety human lives might have been saved in this way alone. In comparison with the death-rate at the Island, we find that eighty-five lives might have been saved, that died after transportation there. By these figures, it is evident that removal to a good hospital, on main land, is far

* See reports of similar cases in this Journal, May 8th, May 22d and Aug. 7th, 1873.

better, for mortality rates, than allowing patients to remain at home; and the better the hospital, the less the percentage of deaths.

First, then, in the matter of treatment, is a hospital located where the land is high, dry and healthful, with high rooms, properly warmed, and ventilated, and sufficiently numerous to enable proper classification of the cases; they should be supplied with every convenience which modern science has invented that will add to the comfort and happiness of its inmates. The surroundings should be pleasant, so that patients can feel that, instead of a "pest-house," they have a home, where the most delicate and sensitive can be so separated from the wards, that they will not be continually shocked by scenes of suffering and of death. Having such an institution, well supplied with watchful and attentive nurses, both night and day, full preparation is made for a hand-to-hand conflict with the disease.

Most of the patients are in the second stage, or that of the eruption, on admission, and require before the eighth day little or no treatment, except perhaps an opiate at night (as sleep is of great importance), and some mild laxative to keep the bowels in soluble condition. In the discrete form, this has been all the treatment required, guarding patients against the ravenous appetite they always have while convalescing. In the severer forms, we have, in addition, given quinine early, and through every stage of the disease, thus keeping the temperature low, and harboring strength for the suppurative stage. During the secondary fever, quinine in large doses, governed by the temperature, milk-punch, brandy, beef tea, and opiates (generally sulphate of morphia) were given freely. It has been sometimes surprising to see the rapid change of a patient, for the better, under the administration of five or even ten grains of quinine every four hours, and $\frac{1}{4}$ grain of morphia, as often; and instead of the high temperature, 105° to 107° , the rapid breathing, and the delirium, we would have a temperature of 100° or 101° , dyspnoea lessened, sleep produced; and our patient, having a new lease of life, would go on to convalescence and recovery. Patients have never been without milk, and have taken it ad libitum. Grapes, oranges, apples, and other fruit have been rationed out daily in all stages of the disease.

In the hæmorrhagic form, the same course has been followed, with the addition of ergot, muriated tincture of iron, tannic acid and other astringents; but none of these have been of benefit.

Complications of the disease were treated upon general principles, never forgetting that the vital powers must be sustained.

Ulcerations of the cornea were treated by frequent cleansing of the eyes, application of weak astringent lotions, and keeping the pupils well dilated with atropine. Delirium, in the third stage, we considered as a cry of debilitated nature for support, and milk punch and beef-tea were urged more heroically.

To prevent pitting, an all important matter, various methods have been advised, many experiments made, and all with doubtful success. If the ulcerations extend deeply into the skin, nothing will prevent cicatrices remaining. Puncturing the vesicles, applying iodine, nitrate of silver, poultices, collodion, excluding the light by darkening the room, excluding the air by covering the face, have only succeeded in making our patient more uncomfortable, if possible, without preventing disfiguration; and latterly, were sorted only to emollient applications, and to frequent sponging with tepid water.

Our hospital solution to prevent itching was composed of carbolic acid, 3 ij.; olive oil, glycerine, in equal parts, 3 ij. This was applied with a soft brush.

In the three hospitals under our charge, we have used all kinds of disinfectants that are in the market, but as carbolic acid has proved the best in destroying all odors, we came, at last, to use no other. We sprinkled our wards with the solution, and our beds and bedding with the powder, made by rubbing up the acid with carbonate of magnesia; our earth and water closets were kept free of all odor by the lavish use of carbolic earth.

Bromo-chloralum has the advantage of being nearly odorless, and in private rooms where there was only one patient answered every purpose, but in wards is far inferior to carbolic acid.

The fumigation of houses, bedding, clothing, &c., has been performed by burning sulphur, and thoroughly saturating them with the fumes of sulphurous acid. This has been the only method used at the hospitals to disinfect clothing, and from the many patients that we have been obliged to send out with a portion of their garments worn in the hospital, not a case has resulted to my knowledge. Baking, or subjecting the cloth to a high temperature, has not been used here, but is no doubt an easy and efficient method.

In closing this report, I would remark that the great importance of every city and town of any size having a permanent and well organized hospital always at hand for any emergency cannot be too strongly urged upon the profession; for, much as I value vaccination, I consider isolation in times of an epidemic far better.* A good hospital maintained for five years at an expense of five

* Dr. Robert H. Blakewell, in his monograph on "Smallpox in Trinidad," remarks:—

"I fear that in some instances wholesale vaccination and re-vaccination at the commencement of an epidemic, has spread smallpox among those who remained unvaccinated. At least it happened, curiously enough, that in the best vaccinated districts in Trinidad, there was the most smallpox. One gentleman, Mr. Robert Knaggs, reported that his district of the town was so well vaccinated in the house-to-house vaccination, 'that an epidemic was impossible.' A few weeks afterward, he had to resign that very district, because the number of cases of smallpox was so large that he was unable to attend on them. A very out-of-the-way district in a distant part of the island was entirely free from smallpox, until an energetic vaccinator, newly appointed, vaccinated upwards of a hundred in the course of three or four weeks. Smallpox then broke out. Certainly, smallpox spread with amazing rapidity in the Port of Spain after the house-to-house vaccination had been a short time in operation. It seems clear to me, that if you vaccinate five or six persons in a small hut, in five or six places each, you will have, at the end of a fortnight, a number of scabs equal to a mild attack of discrete smallpox, and that an unprotected person, living in such a house, will be liable to contract smallpox from these cases."

or even ten thousand dollars a year, without a patient, would be economy as a safeguard for times of need.

If the past epidemic teaches anything, it is not only the importance of having a board of health with special qualifications for that position, unbiased by political trickery or party influence, but the absolute necessity of having an established hospital for contagious diseases, within city limits and easy of access, where the sick poor can have the comforts of home. If Boston had had such a hospital, or had even availed herself one year ago, as later she was obliged to do, of the Roxbury almshouse, she never would have been scourged by the late epidemic, which has cost over one thousand lives, incurred directly an expense to be counted by hundreds of thousands of dollars, to say nothing of consequential damages to business, or of the anxiety of every household which dollars and cents cannot express; she might have saved herself the standing reproach of hundreds of municipalities not only in this state, but all over New England, which have suffered from this disease, and which trace the source of the contagion directly to the carelessness and neglect of Boston alone.

1282 Washington St., June, 1873.

